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NUMERIC TARGET

This section describes the numeric target for dissolved oxygen that will be used to reduce organic matter loads in order to meet water quality objectives (Table 2.1 and 2.2) that are protective of New River beneficial uses (Table 2.3).

A. NUMERIC TARGET

The numeric target for this TMDL is an instantaneous instream dissolved Oxygen (DO) concentration of 5 mg/L (Table 3.1). This numeric target is an established Water Quality Objective in the Colorado River Basin Water Quality Control Plan. Achieving the target is expected to be protective of beneficial uses.

Table 3.1. Numeric Target for New River Dissolved Oxygen TMDL	
Parameter	New River
DO	5.0 mg/L

The numeric target takes into account that the New River is a warm water system. Warm water streams are often muddy with silt and sandy bottoms, and are generally more turbid than coldwater streams (Waters 1995). The numeric target for dissolved oxygen concentrations are protective of the more sensitive populations of organisms (Table 3.2).

B. BASIS FOR NUMERIC TARGET

Dissolved oxygen is a measure of free available oxygen within a body of water and is a parameter in maintaining aquatic life and aesthetic qualities. The United States Environmental Protection Agency (USEPA) established water quality criteria to protect aquatic life (Table 3.2). The warm water criteria are necessary to protect early life stages of warm water organisms.

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Table 3.2. Water quality criteria for ambient dissolved oxygen concentration (mg/L)		
Method	Warmwater Criteria	
	Early Life Stages ^a	Other Life Stages
30 Day Mean	NA	5.5
7 Day Mean	6.0	NA
7 Day Mean Minimum	NA	4.0
1 Day Minimum ^b	5.0	3.0
a Includes all embryonic and larval stages and all juvenile forms to 30-days following hatching.		
b All minima should be considered as instantaneous concentrations to be achieved at all times.		
Source: adapted from USEPA, 1986		

The oxygen content in a river is a function of the sources and sinks of oxygen. The sources of oxygen in the New River include:

1. Reaeration due to physical reaction of air and water;
2. Photosynthesis;
3. Temperature decrease that increases the oxygen saturation potential and decreases microbiological activity; and
4. Dilution from uncontaminated drains and streams.

The sinks of oxygen in the New River include:

1. Organic matter in the continuously flowing water;
2. Temperature rises that cause oxygen vapor loss and increased microbiological metabolism;
3. Fish and other aquatic organisms respiration needs; and
4. Salinity that decreases oxygen solubility.

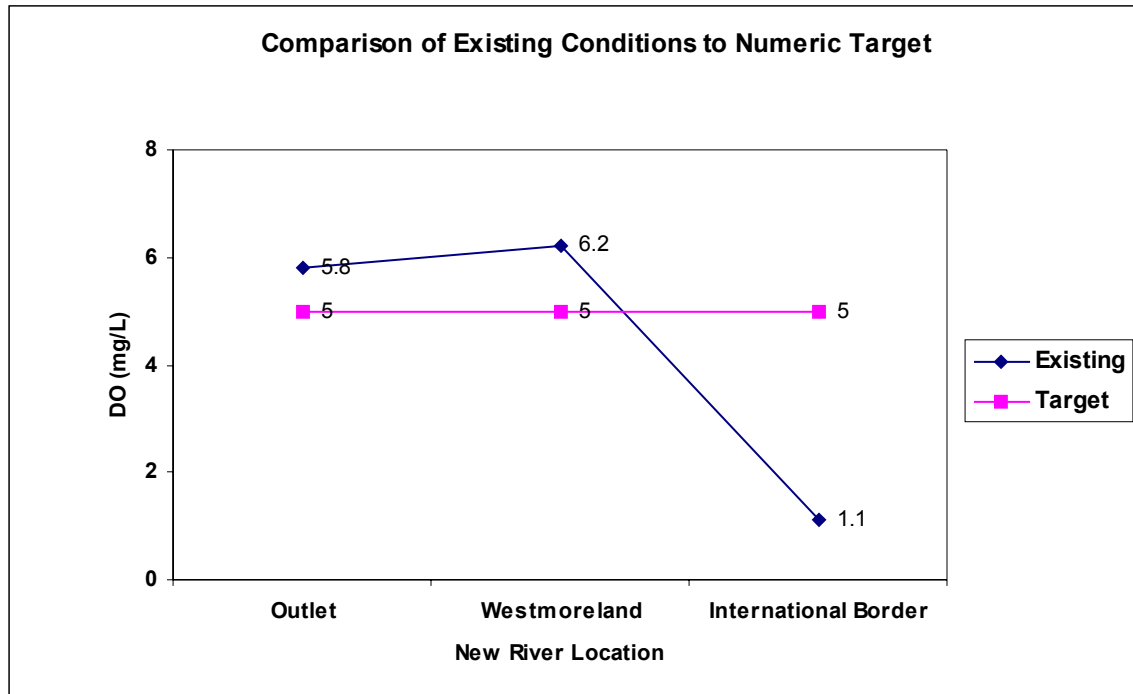
Waters that have low dissolved oxygen (DO) often have foul odors because of waste products produced by organisms that live in low oxygen environments. Very low DO concentrations can result in mobilization of trace metals. A fish that is under stress caused by low oxygen levels in the water is more susceptible to poisoning by insecticides or heavy metals (USEPA, 1986).

C. EXISTING CONDITIONS COMPARED TO NUMERIC TARGET

Existing DO concentration varies among the three sampled sections of the New River. The three sampled sections are: International Border, Westmoreland, and Outlet to Salton Sea. All data from the International Border have DO measurements in shortage of the numeric target. Table 3.3 compares existing DO measurements to the numeric target.

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Figure 1.1: Comparison of Existing Conditions to Numeric Target



References

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